

CLAIMS

WHAT IS CLAIMED IS:

1. A method of creating a selectively-formed lenticular image, the method comprising:
 - providing a substrate having a printed interlaced image portion thereon;
 - providing a coating applicator having a selectively located coating transfer area that substantially conforms to the interlaced image portion on the substrate;
 - applying to the interlaced image portion on the substrate, using the selectively located coating transfer area, a coating layer that substantially conforms to the interlaced image portion to form a coated interlaced image;
 - curing the coated interlaced image to a lenticular pattern forming curing level to create a cured coated interlaced image; and
 - forming a lenticular pattern in the cured coated interlaced image to create a selectively formed lenticular image.
2. The method of Claim 1 further comprising curing the selectively formed lenticular image.
3. The method of Claim 1 further comprising printing an interlaced image to the substrate to create the interlaced image portion.
4. The method of Claim 3 wherein the printing is accomplished using at least one of: sheet-fed, web, roto-gravure, lithographic, flexo-graphic, letter-press, laser, ink-jet, screen and digital techniques.

5. The method of Claim 1 wherein the coating applicator includes a cylinder and a plate secured to the cylinder.
6. The method of Claim 1 wherein the coating applicator includes a flexographic plate.
7. The method of Claim 1 wherein the coating applicator includes a gravure plate.
8. The method of Claim 1 wherein coating applicator includes a slot die.
9. The method of Claim 1 wherein the applying step includes applying at least one of a liquid resin, a varnish, and a liquid polymer.
10. The method Claim 1 wherein the substrate includes paper.
11. The method of Claim 1 wherein the substrate includes at least one of: plastic, synthetic paper, metal, glass, and wood.
12. The method of Claim 1 wherein the substrate is in sheet format.
13. The method of Claim 1 wherein the substrate is in web format.
14. The method Claim 1 wherein the selectively formed lenticular image covers a fractional portion of the substrate.
15. The method of Claim 1 wherein the curing is an ultraviolet (UV) curing.
16. The method of Claim 1 wherein the curing is an electron beam (EB) curing.
17. The method of Claim 1 wherein the forming includes embossing.

18. The method of Claim 1 wherein the applying includes at least one of: lithographic, offset lithographic, flexographic, electrostatic, and gravure.
19. The method of Claim 1 wherein the selectively located coating transfer area on the coating applicator is one of chemically reactive and electrically charged.
20. The method of Claim 1 wherein the curing is a heat set curing.
21. The method of Claim 20 wherein the selectively located coating transfer area on the coating applicator includes at least one of a raised area and a recessed area for transferring the coating layer at least one of directly and indirectly.
22. The method of Claim 1 wherein the forming occurs exclusively in the cured coated interlaced image.
23. The method of Claim 1 wherein the substrate includes printed information in addition to the interlaced image.
24. The method of Claim 23 wherein the printed information includes at least one of: a non-interlaced image, text, a graphic and a picture.
25. The method of Claim 1 wherein the substrate includes blank or nonprinted areas.
26. The method of Claim 1 wherein the coating layer includes a lenticular coating.
27. The method of Claim 1 wherein the coating layer includes a liquid polymer or resin.
28. The method of Claim 1 wherein the curing is continued until the coating layer reaches a predetermined curing level prior to the forming.

29. The method of Claim 1 wherein the applying and the curing are repeated to achieve a desired coating thickness.

30. The method of Claim 1 wherein the forming is accomplished using a lenticular pattern forming device.

31. The method of Claim 30 wherein the lenticular pattern forming device is an engraved cylinder.

32. The method of Claim 30 further including contacting the cured coated interlaced image with the lenticular pattern-forming device and temperature controlling the lenticular pattern forming device to facilitate release of the cured coated interlaced image from the lenticular pattern forming device.

33. The method of Claim 1 wherein the substrate includes a plurality of interlaced image portions.

34. The method of Claim 1 wherein the selectively formed lenticular image comprises a lenticular lens formed from the coating layer positioned over the interlaced image portion.

35. The method of Claim 34 wherein the lenticular lens has a gauge thickness and wherein the gauge thickness is less than about 10 mils.

36. The method of Claim 35 wherein the lenticular pattern-forming device embosses the lenticular pattern to a depth of from about five percent (5%) to about thirty percent (30%) of the gauge thickness of the lenticular lens.

37. The method of Claim 1 wherein forming is accomplished by a lenticular pattern-forming device having a groove pattern that covers substantially the entire device arcuate surface area.

38. The method of Claim 37 wherein the lenticular pattern of the pattern forming device includes a plurality of grooves that run one of parallel to and concentric with a central longitudinal axis of the lenticular pattern-forming device.

39. The method of Claim 1 wherein the selectively formed lenticular image includes a lenticular lens having a pitch of at least 150 lenticules per inch.

40. The method of Claim 1 further comprising creating a plate having a selectively-located coating transfer area that conforms to the interlaced image portion on the substrate.

41. The method of Claims 40 wherein the selectively-located coating transfer area is a raised area.

42. The method of Claim 40 wherein the selectively-located coating transfer area is one of a flush, recessed and charged area.

43. A selectively formed lenticular image made by the method of Claim 1.

44. A method of creating a selectively-formed lenticular image, the method comprising:

providing a substrate having a printed interlaced image portion thereon;

providing a coating applicator having a selectively-located coating transfer area that substantially conforms to the interlaced image portion on the substrate;

applying to the interlaced image portion on the substrate, using the selectively-located coating transfer area, a coating layer that substantially conforms to the interlaced image portion to form an intermediate coated interlaced image;

curing the intermediate coated interlaced image to coating layer application curing level to create an intermediate cured coated interlaced image;

applying to the intermediate cured coated interlaced image portion, using the selectively-located coating transfer area, a second coating layer that also substantially conforms to the interlaced image portion to form a coated interlaced image;

curing the coated interlaced image to lenticular pattern forming curing level to create a cured coated interlaced image; and

forming a lenticular pattern in the cured coated interlaced image to create a selectively formed lenticular image.

45. The method of Claim 44 further comprising curing the selectively formed lenticular image.

46. The method of Claim 44 further comprising printing an interlaced image to the substrate to create the interlaced image portion.

47. The method of Claim 44 wherein applying the coating layer includes applying a lenticular lens material.

48. The method of Claim 44 wherein the selectively formed lenticular image covers a fractional portion of the substrate.

49. The method of Claim 44 wherein the substrate includes a plurality of interlaced image portions.

50. The method of Claim 44 further comprising creating a plate having a selectively-located coating transfer area that conforms to the interlaced image portion on the substrate.

51. A selectively formed lenticular image made by the method of Claim 44.

52. A method of creating a selectively-formed lenticular image, the method comprising:

providing a substrate having a printed interlaced image portion thereon;

providing first and second coating applicators each having a selectively-located coating transfer area that substantially conforms to the interlaced image portion on the substrate;

applying to the interlaced image portion on the substrate, using the first selectively-located coating transfer area, a coating layer that substantially conforms to the interlaced image portion to form an intermediate coated interlaced image;

curing the intermediate coated interlaced image to a coating layer application curing level to create an intermediate cured coated interlaced image;

applying to the intermediate cured coated interlaced image portion, using the second selectively-located coating transfer area, a second coating layer that also substantially conforms to the interlaced image portion to form a coated interlaced image;

curing the coated interlaced image to a lenticular pattern forming curing level to create a cured coated interlaced image; and

forming a lenticular pattern in the cured coated interlaced image to create a selectively formed lenticular image.

53. The method of Claim 52 further comprising curing the selectively formed lenticular image.

54. The method of Claim 52 further comprising printing an interlaced image to the substrate to create an interlaced image portion.

55. The method of Claim 52 wherein applying the coating layer includes applying a liquid lenticular lens material which comprises at least one of a varnish, plastic and a resin.

56. The method of Claim 52 wherein the applying includes using at least one of a flush, recessed and charged area on the coating applicator to transfer the coating layer.

57. The method of Claim 52 further comprising creating a plate having a selectively-located coating transfer area that conforms to the interlaced image portion on the substrate.

58. A selectively formed lenticular image made by the method of Claim 52.

59. A method of creating a selectively-formed lenticular image, the method comprising:

providing a substrate having a printed interlaced image portion thereon;

providing a plurality of coating applicators, each of the applicators having a selectively-located coating transfer area that substantially conforms to the interlaced image portion on the substrate;

applying to the interlaced image portion on the substrate, using one of the selectively-located coating transfer areas, a coating layer that substantially conforms to the interlaced image portion to form an intermediate coated interlaced image;

curing the intermediate coated interlaced image to coating layer application curing level to create an intermediate cured coated interlaced image;

applying to the intermediate cured coated interlaced image portion, using one of the selectively-located coating transfer areas, at least one additional coating layer that also substantially conforms to the interlaced image portion to form a coated interlaced image;

curing the coated interlaced image to a lenticular pattern forming curing level create a cured coated interlaced image; and

forming a lenticular pattern in the cured coated interlaced image to create a selectively formed lenticular image.

60. The method of Claim 59 further comprising curing the selectively formed lenticular image.

61. The method of Claim 59 further comprising printing an interlaced image to the substrate to create an interlaced image portion.

62. The method of Claim 59 wherein applying the coating layer includes applying a liquid lenticular lens material which comprises at least one of a varnish, thermoplastic and a resin.

63. The method of Claim 59 wherein the applying includes using at least one of a flush, recessed, chemically repelling, and charged area on the coating applicator to transfer the coating layer.

64. The method of Claim 59 further comprising creating a plate having a selectively-located coating transfer area that conforms to the interlaced image portion on the substrate.

65. A selectively formed lenticular image made by the method of Claim 59.

66. A method of creating a plurality of selectively-formed lenticular images, the method comprising:

providing a substrate having a plurality of printed interlaced image portions thereon;

providing a coating applicator having a plurality of selectively-located coating transfer areas that substantially conform to the interlaced image portions on the substrate;

applying to the interlaced image portions on the substrate, using the selectively-located coating transfer areas, a coating layer that substantially conforms to the interlaced image portions to form a plurality of coated interlaced images;

curing the coated interlaced images to a lenticular pattern forming curing level to create a plurality of cured coated interlaced images; and

forming a lenticular pattern in each of the cured coated interlaced images to create a plurality of selectively formed lenticular images.

67. The method of Claim 66 further comprising curing the selectively formed lenticular image.

68. The method of Claim 66 further comprising printing an interlaced image to the substrate to create an interlaced image portion.

69. The method of Claim 66 wherein applying the coating layer includes applying a liquid lenticular lens material which comprises at least one of a varnish, thermoplastic and a resin.

70. The method of Claim 66 further comprising creating a plate having a selectively-located coating transfer area that conforms to the interlaced image portion on the substrate.

71. A selectively formed lenticular image made by the method of Claim 66.

72. A system for making a selectively-formed lenticular image comprising:

means for applying, to an interlaced image portion printed on a substrate, a coating layer that conforms to the interlaced image portion to form a coated interlaced image, the means comprising a selectively-located coating transfer area that substantially conforms to the interlaced image portion on the substrate;

means for curing the coated interlaced image to a lenticular pattern forming curing level to create a cured coated interlaced image; and

means for forming a lenticular pattern in the cured coated interlaced image to create a selectively formed lenticular image.

73. The system of Claim 72 further comprising means for curing the selectively formed lenticular image.

74. The system of Claim 72 wherein the means for applying applies a coating layer to a plurality of interlaced image portions.

75. The system of Claim 72 wherein the means for applying includes a coating applicator that includes a cylinder and a plate secured to the cylinder.

76. The system of Claim 72 wherein the coating applicator includes a flexographic plate.

77. The system of Claim 72 wherein the means for applying includes means for applying a liquid lenticular lens material which comprises at least one of a varnish, plastic and a resin.

78. The system of Claim 72 wherein the substrate includes at least one of paper, plastic, synthetic paper, metal, glass and wood and wherein the substrate is in one of sheet and web format.

79. The system of Claim 72 wherein the means for forming includes embossing means.

80. The system of Claim 72 wherein the means for applying includes at least one of a flush, recessed and charged area.

81. The system of Claim 72 wherein the means for forming includes a lenticular pattern forming device.

82. The system of Claim 81 wherein the means for forming forms the lenticular pattern to a depth of from about five percent (5%) to about thirty percent (30%) of the gauge thickness of the lenticular lens.

83. The system of Claim 81 wherein means for forming includes a lenticular pattern-forming device having a groove pattern that covers substantially the entire device arcuate surface area.

84. The system of Claim 81 wherein means for forming includes a lenticular pattern-forming device having a platen with a recessed area and a die positioned within the recessed area.

85. The system of Claim 84 wherein the die fills substantially all of the recessed area.
86. The system of Claim 84 wherein lenticular pattern forming device comprises a plurality of dies positioned within the recessed area.
87. The system of Claim 81 wherein the means for applying includes a heatable platen for transferring a membrane portion from a foil membrane to the interlaced image portion printed on the substrate.